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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Thomas

Atty. Docket No.: TPL-10203/03

Serial No.: 10/791,453

Group Art Unit: 3747

Filed: March 2, 2004

Examiner:

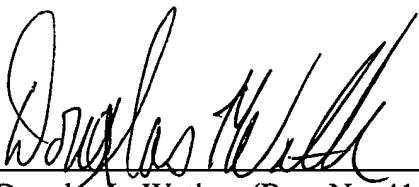
For: HOMOGENEOUS CHARGE COMPRESSION IGNITION AND BARREL ENGINES

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT  
WITHIN THREE MONTHS OF FILING OR BEFORE MAILING  
OF FIRST OFFICE ACTION (37 CFR 1.97(b))**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

The information disclosure statement submitted herewith is being filed within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office Action on the merits, whichever event occurs last. 37 CFR 1.97(b).

Date: July 29, 2004

  
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Douglas L. Wathen (Reg. No. 41,369)  
GIFFORD, KRASS et al  
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Birmingham, MI 48009  
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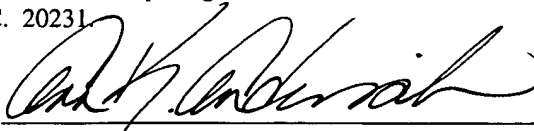
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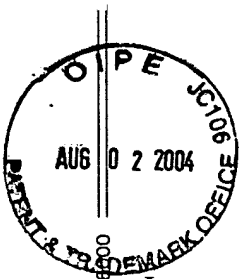
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CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231

Date July 29, 2004

  
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Ann K. Andrusiak



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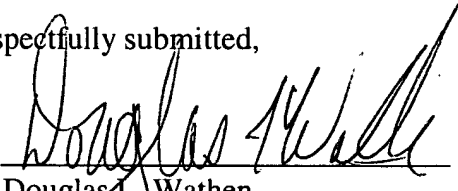
Dear Sir:

In compliance with the duty of disclosure under 37 C.F.R. §1.56, it is respectfully requested that this Information Disclosure Statement be entered and the references listed on attached Form PTO-1449 be considered by the Examiner and made of record. The above-referenced application is a divisional of U.S. patent application 10/021,192 filed October 30, 2001. In accordance with 37 C.F.R. §1.98(d), copies of the listed references are not required.

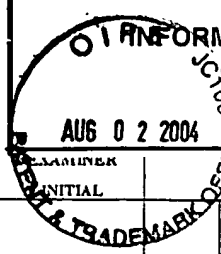
The U.S. patent references relating to the above-referenced application were submitted in an electronic Information Disclosure on July 29, 2004.

In accordance with 37 C.F.R. §1.97(b), this Information Disclosure Statement is not to be construed as a representation that a search has been made or that no other possible material information as defined in 37 C.F.R. §1.56(a) exists.

Respectfully submitted,

By:   
Douglas L. Wathen  
Reg. No. 41,369

Date: July 29, 2004

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)	
	Stanglmaier R., Ryan T. and Souder J., "HCCI Operation of a Dual-Fuel Natural Gas Engine for Improved Fuel Efficiency and Ultra-Low NOx Emissions at Low to Moderate Engine Loads", 2001, SAE Paper 2001-01-1897
	"Engine Smoothness", 2000, <a href="http://www.fortunecity.com/silverstone/lania/58/technical_school/engine/smoot">www.fortunecity.com/silverstone/lania/58/technical_school/engine/smoot</a>
	"Reciprotating Combustion Engine", 2001, <a href="http://reciprotating.com/default.htm">http://reciprotating.com/default.htm</a>
	"Homogeneous-Charge Compression Ignition Stratified Charge Compression Ignition Engine Laboratory", 2000, <a href="http://www.ca.sandia.gov">http://www.ca.sandia.gov</a>
	"SVD - A Unique Engine Concept", Feb. 2000, <a href="http://www.saab.com/home/GLOBAL/en/pressreleases.xml">http://www.saab.com/home/GLOBAL/en/pressreleases.xml</a>
	"Dynamics of the Swash Plate Mechanism" 1984, Proceedings of the 19845 Inter Compressor Engineering Conference
	"New Engine Excites Many in Auto Industry", 1998, <a href="http://www.detnews.com/1998/autos/9805/20/052001.htm">http://www.detnews.com/1998/autos/9805/20/052001.htm</a>
	Kawabata, Y., Nakagawa K. and Shoji, F., "Operating Characteristics of Natural Gas Fueled Homogeneous Charge Compression Ignition", 1998, Annual Technical Report Digest
	"Dyna-Cam Revolutionary Engine Design", 2001, <a href="http://www.dynacam.com">http://www.dynacam.com</a>
	Christensen, M., Johansson, B., and Einewall, P., "Homogeneous Charge Compression Ignition (HCCI) using isooctane, ethanol, and Natural Gas. A Comparison with Spark-Ignition Operation", 1997, SAE Paper 972874
	Hultqvist, A., Christensen, M., and Johansson, P., "A Study of the Homogeneous Charge Compression Ignition Combustion Process by Chemiluminescence Imaging", 1999, SAE Paper 1999-01-3680
	Gray A. and Ryan T., "Homogeneous Charge Compression Ignition (HCCI) of Diesel Fuel", 1997, SAE Paper 971676

EXAMINER	DATE CONSIDERED
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*EXAMINER INITIAL	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)
	Zipf B. and Meijer R., "Variable Stroke Power Control for Stirling Engines", 1981, SAE Paper 810088
	Clucas D.M. and Raine J.K., "A New Wobble Drive with Particular Application in a Stirling Engine", 1994, IMechE vol. 208
	Kontarakis G., Collings N. and Ma T., "Demonstration of HCCI Using Single-Cylinder, Four-stroke SI Engine with Modified Valve Timing", 2000 SAE 2000-01-2870
	Pucher G., Gardener D., Bardon M. and Battista, V., "Alternative Combustion Systems for Piston Engines Involving Homogeneous Charge Compression Ignition Concepts - A Review of Studies Using Methanol, Gasoline, and Diesel Fuel", 1996, <a href="http://www.bcresearch.com">http://www.bcresearch.com</a>
	Gill G.S. and Freudenstein F., "Minimization of Inertia-Induced Forces in Spherical Four-bar Mechanisms. Part 2: Wobble-Plate Engines", 1983, ASME
	Gill, G.S. and Freudenstein F., "Minimization of Inertis-Induced Forces in Spherical Four-bar Mechanisms. Part 1: The General Spherical Four-bar Linkage", 1983, ASME Vol 105/471
	Hardenberg H. and Buhl H., "The Mercedes-Benz Om 403 VA - A Standard Production, Compression-Ignition, Direct-Injection Multifuel Engine", 1982, SAE Paper 820028
	Hiroshi T. and Masaharu H., "Historical Review of the Wobbleplate and Scroll Type Compressors", 1990, SAE Paper 901737
	Li J., Chae J., Lee S. and Jeong J., "Modeling the Effects of Split Injection Scheme on Soot and NOx Emissions of Direct Injection Diesel Engines by a Phenomenological Combustion Model", 1996, SAE Paper 962062
	McLanahan J., "Barrel Aircraft Engines: Historical Anomaly or Stymied Innovation", 1998, SAE Paper 985597
	Olsson J., Erlandsson O. and Johansson B. "Experiments and Simulation of a Six-Cylinder Homogeneous Charge Compression Ignition (HCCI) Engine", 2000, SAE Paper 2000-01-2867
	"Erickson MCC FE-120", 1001, <a href="http://www.ericksonmotors.com/fe-120.htm">www.ericksonmotors.com/fe-120.htm</a>

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Miyagawa K. and Kavukawa H., "Development of the Swash Plate-Type Continuously Variable Displacement Compressor", 1998, SAE Paper 980290

Sadashivappa K., Singaperumal M. and Narayanasamy K., "On the Efficiency of the Axial Piston Motor Considering Piston Form Deviations", 1995, Pergamon 0957-4158 (95) 00074-7

Edge K.A. and Darling J., "The Pumping Dynamics of Swash Plate Piston Pumps", 1989, ASME Vol 111/307

Thieme L. and Allen D., "Testing of a Variable-Stroke Stirling Engine", 1986, 21st Intersociety Energy Conversion Engineering Conference, Paper 869104

Thieme L., "Initial Testing of a Variable Stroke Stirling Engine", 1985, U.S. Dept. of Energy, NASA TM-86875

Au M., Girard J. and Hiltner J., "Homogeneous Charge Compression Ignition", 2001  
<http://www.me.berkeley.edu/~mctai/hcci.html>

Christensen M., Hultqvist A. and Johansson B., "Demonstrating the Multi-Fuel Capability of a Homogeneous Charge Compression Ignition with Variable Compression Ratio", 1999, SAE Paper 1999-01-3679

Christensen M. and Johansson B., "Influence of Mixture Quality on Homogeneous Charge Compression Ignition", 1998, SAE Paper 982454

Christensen M., Johansson B., Amneus P., and Mauss F., "Supercharged Homogeneous Charge Compression Ignition (HCCI)", 1998, SAE Paper 980787

Kraft M., Maigaard P. and Mauss F., "Homogeneous Charge Compression Ignition Engine: A Simulation Study on the Effects of Inhomogeneities", 2000, ASME 2000 Spring Technical Conference

Kraft M., Maigaard P., Mauss F. and Christensen M., "Investigations of Combustion Emissions in a HCCI Engine Measurements and a New Computational Model 2000 28th International Symposium for Combustion", 4E12

Maricq M., Munoz R., Yang J. and Anderson R., "Sooting Tendencies in an Air Forced Direct Injection Spark-Ignition (DISI) Engine", 2001, SAE Paper 2001-01-0255

EXAMINER

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Manring N., "Slipper Tipping within an Axial-Piston Swash-Plate Type Hydrostatic Pump", 1998, ASME FPST-Vol. 5

Jingu N., Fukai I. and Kurihara M., "The Development of a Fixed-displacement Single-sided Swash Plate a/c Compressor", 2001, SAE Paper 2001-01-0971

Kaahaaina N., Simon A., Caton P. and Edwards C., "Use of Dynamic Valving to Achieve Residual-Affected Combustion", 2000, SAE Paper 2001-01-0549

Stanglmaier R. and Robert C., "Homogeneous Charge Compression Ignition (HCCI): Benefits, Compromises, and Future Engine Applications", 1999, SAE Paper 1999-01-3682

Thring R., "Homogeneous Charge Compression Ignition (HCCI) Engines", 1989, SAE Paper 892068

Fiveland S., and Assanis D., "A Four-Stroke Homogeneous Charge Compression Ignition Engine Stimulation for Combustion and Performance Studies", 2000, SAE Paper 2000-01-0332

Nishimura T., Umeda T., Tsuta T. and Fujiwara, M., "Dynamic Response Analysis of a Swash Plate Type Hydraulic Piston Pump", 1995, ASME/JSME Pressure Vessels and Piping Conference PVP-Vol. 300

Sheiretov T., Glabbeek W. and Cusano C., "Simulative Friction and Wear Study of Retrofitted Swash Plate and Rolling Piston Compressors, 1995.

Taya T., Kobayashi H., Kawaguchi M. and Inagaki M. "10PC20 Swash Plate Type Variable Displacement Compressor for Automobile Air Conditioners", 1992, SAE Paper 920260

Ryan T. and Callahan T. "Homogeneous Charge Compression Ignition of Diesel Fuel", 1996, SAE Paper 961160

Tsuta T., Iwamoto T. and Umeda T. "Combined Dynamic Response Analysis of a Piston-Slipper System and Lubricants in Hydraulic Piston Pump", 1999, ASME PVP Vol. 396

Zhang X., Cho J., Nair S., Manring N., "Damping on the Swash Plate of an Axial-Piston Pump 2000", 2000, American Control Conference

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## FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	WO 98/07973	2/26/98		F02M	7/00	✓	
	WO 92/09798	6/11/92		F02B	75/04	✓	
	WO 92/09799	6/11/92		F02B	75/04	✓	
	WO 00/57044	9/28/00		F02B	57/08	✓	
	EP 0 093 822		Europe	F 02B	57/10		✓

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	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
	EP 0 136 565		Europe	F02B	61/06	✓	
	DE 3214516		Germany	F02B	71/00		✓
	DE 3342108		Germany	F02B	75/32		✓
	DE 4015867		Germany	F02B	57/00		✓
	JP 580183825	1983	Japan	F02B	75/26		✓

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		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
		JP 55-23308	1980	Japan	F01B	3/04		✓
		20203	1899	France				✓
		33,686	1932	Britain			✓	
		416,364	1910	France				✓
		433,357	1911	France				✓


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						YES	NO
	FR 624,291	1926	France				✓
	FR 711,040	1931	France				✓
	FR 2 557 659	1983	France	F16H	25/12		✓
	FR 2 566 460	1984	France	F02B	75/26		✓
	FR 2 707 700	1989	France	F02B	75/32		✓

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